Glaucoma and associated factors among adults in Jimma town, southwest Ethiopia

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Abstract

Purpose

The study aims to assess the level of awareness and knowledge about glaucoma and its associated factors among adults in Jimma town, Southwest Ethiopia.

Methods

A community-based cross-sectional study was *employed among 634 sampled adults in Jimma town from May 1/2020 to June 1/2020. A multistage sampling technique was* employed to pick out the *study participants. Logistic regression was used to identify the associated factors of both awareness and knowledge about glaucoma.*

Results

The proportion of awareness and knowledge towards glaucoma among adult was 230 (37.8% (95% CI, 33.9% -41.6%) and 117/230 (50.9%, 95% CI 44.3%, 57.8%) respectively. Educational status [(AOR = 2.32, 95% CI:(1.18, 4.55)], family history of glaucoma [(AOR = 3.82, 95% CI:(2.35, 6.21)], ever had eye examination [(AOR = 2.54, 95% CI:(1.7,3.78)], and wealth index status [(AOR = 1.87 95% CI:(1.04, 3.35)], were associated factors with awareness about glaucoma whereas educational status [(AOR = 6.07, 95% CI:(2.06, 17.87)], and ever had eye examination [(AOR = 3.58, 95% CI:(2.01, 6.40)], were the associated factors with knowledge of glaucoma.

Conclusion

More than one-third and half of them had awareness and knowledge of glaucoma among adults in Jimma town respectively. Educational status, family history of glaucoma, eye examination, and wealth status were associated factors with awareness about glaucoma whereas educational status and eye examination were associated factors with knowledge of glaucoma. A comprehensive and routine health education program should be implemented to enhance awareness of glaucoma prevention, risks, and treatment.

Introduction

Glaucoma could be a group of diseases characterized by progressive optic neuropathy, characteristic changes, and loss within the visual view. More recently it's been described as a neurodegenerative disorder of the second cranial nerve with acquired loss of retinal ganglion cells (1). People with glaucoma often do not experience symptoms until the disease is advanced and there has already been considerable damage to the person's vision (2).

Globally, 90% of the Glaucoma-affected people are undiagnosed (3). The prevalence among the adult population was estimated, at 2.31% in Asia, 3.65% in Latin America and the Caribbean, in Asia the prevalence of POAG ranged from 0.5% in a Mongolian population to 3.9% in a Japanese group and 4.20% in Africa (4).

Glaucoma is the second leading cause of blindness next to cataracts globally (5). In Ethiopia, glaucoma is the fifth cause of blindness causing irreversible sight loss for an estimated 62,000 Ethiopians (6). The burden of each of these diseases varies among racial considerably and ethnic groups worldwide. Patients with glaucoma are reported to have poorer quality of life, reduced levels of physical, emotional, and social well-being, and utilize more health care resources (7).

Public awareness and knowledge of glaucoma play a significant role in raising public health-seeking behavior for a regular eye checkups and increases the chance of identifying undetected cases (8). A continued effort through initiatives like public health education, professional training programs, and programs focused on early disease detection and treatment is needed for vision loss to be decreased in the developing world (9).

It is also equally important to design effective awareness-raising strategies based on identified factors affecting the awareness and knowledge about glaucoma. Most of the previous study regarding glaucoma in Ethiopia was institution based. Only a few studies tried to assess awareness and knowledge of glaucoma and associated factors at the community level. For early diagnosis and management of glaucoma, the level of knowledge and awareness about glaucoma will have a great contribution. While the late diagnosis of glaucoma is due to a lack of awareness about the disease, which significantly increases the risk of blindness. Therefore, this study aimed to assess the level of awareness and knowledge of glaucoma among adults in Jimma town.

Methods And Materials

Study design and participants

A Community based cross-sectional study was conducted. The study was conducted in selected Kebeles of Jimma town. Jimma town is located in Southwest Ethiopia approximately 352kilometers away from Addis Ababa the capital city of the country. According to the Jimma town administration office report, the total number of populations above ≥35 years in the 2019/2020 fiscal year was 26,559 of whom 13, 896 were females and 12,663 were males. This study was conducted in Jimma town from May 1st to June 1st /2020.

All adults whose ages are ≥35 years residing in Jimma town. However, those who were not able to respond during data collection time and those who lived less than six months in Jimma town were excluded from the study.

The sample size for this study was estimated by using single population proportion formula with the assumption of the level of awareness of respondents towards glaucoma conducted in Gondar, Northern Ethiopia was 35.1% and the level of knowledge among awareness towards glaucoma conducted in the same study area Gondar was 49.6% (10), the margin of sampling error to be tolerated (d= 5%), at 95% confidence interval of certainty, considering design effect of 1.5 and 10% nonresponse rate which gave the final sample size of 634. Multi-stage sampling was used employed to recruit study participants

Data Collection tools and procedure

Data collection tools were established after reviewing relevant literature the instrument consisted of five parts including demographic characteristics, health-related characteristics, awareness, and knowledge about glaucoma, and source of information about glaucoma.

The awareness of glaucoma questionnaire was assessed using the question 'have you ever heard of glaucoma?' and gave at least one answer such answers as 'glaucoma is high eye pressure', 'glaucoma is high eye pressure causing blindness', 'glaucoma causes damage to the eye nerve', blinding eye disease causing eye nerve damage, eye disease cause visual field loss and participants were classified as aware of glaucoma if answer positive response ('Yes') for the above question (11), While knowledge of glaucoma was assessed using knowledge questions (12,13).

Data quality control

To assure quality, one day of training was given to data collectors and supervisors on the objectives of the study, data collection tools, and research ethics. Supervision was conducted by supervisors and principal investigators to monitor the overall data collection process. The data collection tool was translated to local languages (Afan Oromo and Amharic) and translated back to English to check the consistency.

The questionnaire was pre-tested at Agaro town on 5% of the samples, it gave reliability *a (*Cronbach's Alpha) = 0.705, the collected data were checked for completeness and consistency by the principal investigator and supervisor every day at the end of each data collection day.

Data Analysis

The data were entered into Epi data (Manager and Entry client) 4.6 version statistical software and the generated data was exported to SPSS version 25. In the first set of analyses, descriptive statistics were used to assess the frequency of responses for demographic variables and study variables. The outcome variable was tested for normality distribution. The goodness of fit of the final model was checked using the Hosmer Lemeshow test considering good fit if P-value ≥ 0.05 for both outcome variables 0.322 and 0.57 of awareness and knowledge respectively.

The mean and standard deviation (SD) was reported for continuous variables. Binary logistic regression was used to analyze. Bivariate analysis was used to investigate the relationship between variables, all variables statistically significant in the output at P-value ≤ 0.25 were a candidate for multivariate analysis

to control for confounding effects. Statistical significance was declared at P-value ≤ 0.05. The results of the study were presented in tables, figures, and text.

Ethics approval and consent to participate

An ethical clearance letter was obtained from the Institutional Review Board of the Institute of Health of Jimma University. Before administering the questionnaires, the aims and objectives of the study were explained, and oral consent was obtained from the study participants. The participants were also told that participation is voluntary, and confidentiality and anonymity were ensured throughout the execution of the study as participants were not required to disclose personal information on the questionnaire.

Results

Socio-economic and demographic characteristics of the study participants

A total of 634 participants were interviewed, and 608 of them responded, giving the study a 95.6% response rate. Respondents' ages ranged from 35 to 87 years, with a mean (SD) age of 46.99 (10.69) years. More than half 339 (55.8%) of the respondents were females. Two hundred sixty-six (43.8%) of the respondents were Muslims in their religion followed by Orthodox Christians which was 205 (33.7%). Nearly two-thirds, 393 (64.6%) of the respondents were married. About one-fourth, 156 (25.7%) of the respondents had completed secondary education. More than one-third, 217 (35.7%) reported that their occupation was a merchant. (**Table 1**).

Regarding the wealth status of the respondents, 20.6%, 22.9%, 17.9%, 18.9%, and 19.7% were categorized as very poor, poor, medium, high, and very high in their wealth status respectively. (**Figure: 1**).

Health-related characteristics of the study participants

486 respondents, or 79.8%, had no known family history of glaucoma. A little more than two-thirds of the participants in the study, 415 (68.3%), had no diabetes mellitus, and 84 (13.8%) were unaware of their diabetes mellitus status. Similarly, more than half of 360(59.2%) of the study participants were not hypertensive. Before the data collection, 299 (34.4%) study participants had their eyes examined. Of the study's participants, 269 (44.2%) had a history of eye disease. One hundred eleven (18.3%) of study participants had a history of smoking in their lifetime of which 46 (41.4%) were current smokers (**Table 2**).

Respondents’ sources of information about glaucoma

The responders had access to a variety of sources of information about glaucoma. The majority of respondents, 152 (64.7%), learned about glaucoma from the media, followed by health educators (56.2%). (**Figure 2**).

The level of awareness towards glaucoma among adults in Jimma town

Have you ever heard of glaucoma? Was a question to which 235 respondents (38.7%) replied: "yes." and of them, 101 (43%) have defined glaucoma as a "cause of visual field loss," 120 (51.1%) have defined glaucoma as "high eye pressure damaging eye," 62 (26.4) have described glaucoma as “causal visual field loss” (**Table 3**).

The level of awareness of glaucoma was 37.8 % (95% CI, 33.9% -41.6%) (**Figure 3**).

The level of knowledge about glaucoma among adults in Jimma town

Of 230 participants who had awareness about glaucoma, 117 (50.9%), (95 CI, 44.3-57.8) had good knowledge regarding glaucoma (Figure 7). The mean knowledge score of glaucoma was 9.12 ±2.94.

Factors associated with awareness towards glaucoma among adults in Jimma town.

In bivariate logistic regression sex of the respondent, educational status, occupational status, family history of glaucoma, history of diabetes, history of hypertension, history of eye disease, eye examination, and wealth index were associated with awareness about glaucoma. In Multivariable logistic regression educational status, family history of glaucoma, eye examination, and wealth status were factors associated with awareness of glaucoma.

Adults attended grade 12 and above had 2.3 times higher odds of awareness about glaucoma as compared to those who couldn’t read and write in Jimma town [(AOR=2.32, 95% CI:(1.18, 4.55)), p=0.014))].

The odds of having awareness of glaucoma were 3.8 times higher than among adults with a family history of glaucoma as compared to individuals with no family history of glaucoma (AOR=3.82 (95% CI, 2.35-6.21), p <0.001). Adults who underwent eye examination were 2.54 times more likely to have awareness of glaucoma as compared to those adults with no eye examination (AOR=2.54 (95% CI, 1.70, 3.78), p <0.001)). Similarly, adult populations with a very high wealth index status were 1.8 times more likely to have awareness of glaucoma as compared to those who had a very low wealth index status (AOR=1.87 (95% CI, 1.04-3.35), p=0.035) (Table 4).

Associated factors of knowledge towards glaucoma among adults in Jimma town.

In bivariate logistic regression sex, educational status, family history of glaucoma, history of eye disease, eye examination, and wealth index status were factors associated with knowledge about glaucoma.

In multivariable logistic regression educational status and ever had eye examinations were factors associated with knowledge about glaucoma.

Thus, the odds of having knowledge about glaucoma were 6 times higher among adults who attended grade 12 and above education as compared to adults who couldn’t read and write (AOR=6.07 (95% CI, 2.06, 17.87), p<0.001)). In the same manner, adults individuals who had undergone eye examination were

3.5 times more likely to be knowledgeable about glaucoma than those with no eye examination previously ((AOR=3.58 (95% CI, 2.01, 6.40), p<0.001)) (**Table 5**).

Discussion

This study assessed the level of awareness and knowledge of glaucoma and its associated factors among adults in Jimma Town. The result of this study indicated that the level of awareness of glaucoma was 37.8 % (95% CI, 33.9% -41.6%). This finding is in line with a study conducted in Ghana which was 39.3%, and a study conducted in Gondar, North West Ethiopia which was 35.1% (10,14). However, the finding of this study was found to be lower than those studies conducted in India (45.45%) (15), Chengdu, China (68.9%) (16), Saudi Arabia (53%) (17), and Iran (46%) (18). The possible reason might be civilization, access to education and health care services, and differences in socio-economic status. However, the results of this study are higher than those studies conducted in Nepal which was 17.4 % (19), and Nigeria which was 21.1% (20). The possible justification may be the time of the study conducted and the socio-cultural difference.

According to the study's findings, 50.9% of people knew something about glaucoma. These results are in line with research from Gondar (Ethiopia) (49.6%), (10), and Nepal 50.9% (19). This study was higher than a local study conducted in Gish Abay, Northern Ethiopia (21) the proportion of knowledge about glaucoma was 16.4%. The possible justification might be Jimma is more urban than Gish Abay and there may be a difference in access to information and health service. This study was lower than a study conducted in South Africa which was the level of knowledge about glaucoma was 62.0% (22), the possible justification is might be due to methodological difference , access to education and health care service, and difference in socio-economic status.

This study showed that Educational status was the associated factor of awareness about glaucoma. Adults who attended at least secondary school had awareness about glaucoma 2.02 times higher than adults who couldn’t read and write. This study is similar to those studies done in North India, Chengdu, China Tehran Iran, Saudi Arabia, Nigeria, Ghana, and Gondar Ethiopia (10,14–18,20). This is because the chance of exposure to different health and health-related information could be gained through education by reading different sources of information regarding the problem as well as the way of understanding and need to hear from different sources of information becomes high as an educational status increase (10,14,16–18,20,23).

According to the study's findings, glaucoma awareness was influenced by a family history of the disease. Adults with a family history of glaucoma were 3.8 times more likely to be aware of the disease than adults without such a history. This is consistent with research from Nigeria and India (20,23,24). The reason could be that if a family member has been diagnosed with glaucoma, the patient may have shared information about the disease's signs and symptoms as well as the medication the patient has used. As a result, the person may have learned about glaucoma through acquired knowledge and experience.

In this study, ever having an eye examination was associated with awareness about glaucoma. The odds of having awareness about glaucoma were 2.5 times higher among adults who had eye examinations at least one time in their life than those adults who had not had eye examinations. This is similar to studies done in Nigeria, India, and Gondar, North Ethiopia (10,20,24). The possible justification might be individuals may get information from health professionals about glaucoma during their eye examination or checkup.

The result of this study revealed that wealth index status was associated with awareness of glaucoma. Adults categorized under the very high wealth index were 1.8 times higher to have awareness of glaucoma than those who were categorized under very low wealth index status. The possible explanation might be adults with a high wealth index status will have better access to information, health care services, and education

The findings of this study indicated that knowledge about glaucoma was correlated with educational status. Adults with college degrees and above had a 6 times higher chance of knowing about glaucoma than adults who couldn't read or write. This study is supported by studies conducted in India (23), Chengdu China (16), Tehran Iran (18), Saudi Arabia (17), Pakistan (25), Gondar North West Ethiopia (10), and Gish Abay northwest Ethiopia (21). The possible justification may be education may pave the way to get information differently and as a result, it may increase access to health information and health-seeking behavior.

The result of this study indicated that ever having an eye examination was an associated factor of knowledge about glaucoma. The odds of having knowledge about glaucoma were 3.6 times higher among adults who had an eye examination at least once in their life than those adults who never had an eye examination. This study is supported by studies conducted in Nigeria (20)and India (23). The possible explanation may be adults would get detailed information from health care workers during their visit to health facilities through health education or other means of information dissemination like a poster.

Strength and Limitation

Hence, the study used a community cross-sectional study and it gives more representative data. While the major limitation of the study might be recall bias because some explanatory variables like a history of previously eye checkup and family history of glaucoma

Conclusion

The level of awareness and knowledge of glaucoma among adults in Jimma town was low. Educational status (having at least secondary school), ever had an eye examination, having a family history of glaucoma, and wealth index status were the associated factors of awareness of glaucoma in Jimma town. Similarly, educational status (having at least secondary school) and ever had eye examination were the independent predictor variables of knowledge about glaucoma. The study recommends Jimma town health office should facilitate a health education program to enhance awareness and knowledge about

the nature of glaucoma and should equip health professionals and health facilities to provide regular eye examinations in the health facilities. Jimma University Should incorporate glaucoma in a community-based training program since it is important to improve health literacy. In the future researchers should conduct other longitudinal studies to know the causal factors of poor awareness and knowledge about glaucoma among adults.

Declaration

We, declare that this research article is our original work, has not been published in any journals, and that all sources of materials used for the article have been fully Acknowledged.

Competing interests

On behalf of all authors, the corresponding author states that there is no conflict of interest.

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Author's contribution

TM, WA, MA, DT, KA, and IB conceived the study. TM, WA, and MA participated in the design, data analysis, and interpretation of the result. TM, WA, MA, TL, DT, and IB were involved in data acquisition. TM, DT, and IB drafted and substantively revised the manuscript. WA, MA, KA, DT, and WA critically reviewed the manuscript. All authors read and approved the final manuscript.

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Tables

Table 1: Socio-economic and demographic characteristics of adults to assess the level of awareness and knowledge of glaucoma in Jimma town, 2020 (N= 608)

Variables	Categories	Frequency	Percent (%)
Age	**35-44**	**302**	**49.7**
	45-54	**167**	**27.5**
	55-64	85	14.0
	≥65	54	8.9
Sex	**Female**	**339**	**55.8**
	Male	269	44.2
Ethnicity	**Oromo**	**231**	**38.0**
	Amhara	120	19.7
	Dawuro	62	10.2
	Keffa	79	13.0
	Yeme	76	12.5
	Gurage	25	4.1
	Others [1]	15	2.5
Religion	**Muslim**	**266**	**43.8**
	Orthodox	205	33.7
	Protestant	109	17.9
	Catholic	28	4.6
Marital status	**Married**	**393**	**64.6**
	Divorced	73	12.0
	Widowed	86	14.1
	Single	56	9.2
Educational status	Cannot read and write	86	14.1
	Can read and write	106	17.4
	Primary	149	24.5
	Secondary	**156**	**25.7**
	Above 12	111	18.3
Occupational status	Government employee	104	17.1
	Merchant	**217**	**35.7**

	Self employed	172	28.3
	Farmer	27	4.4
	Housewife	88	14.5

Other [1] Tigray, Silte.

Table 2: Health related characteristics to assess the level of awareness and knowledge of glaucoma among adults in Jimma town, 2020 (n=608)

Variables	Categories	Frequency	Percent
Family history of glaucoma	Yes	123	20.2
	No	**485**	**79.8**
Diabetes mellitus	Yes	109	17.9
	No	**415**	**68.3**
	Don't know	84	13.8
Hypertension	Yes	155	25.5
	No	**360**	**59.2**
	Don't know	93	15.3
Ever examined eye	Yes	209	34.4
	No	**399**	**65.6**
Duration of eye examination(month) (n=209)	**<16 months**	**136**	**65.1**
	≥16 months	73	34.9
History of smoking	Yes	111	18.3
	No	**497**	**81.7**
Currently smoking status(n=111)	Yes	46	41.4
	No	**65**	**58.6**
History of eye disease	Yes	269	44.2
	No	**339**	**55.8**

Table 3: Frequency of awareness items to assess the level of awareness among adults in Jimma town, 2020.

Variables	Categories	Frequency	Percent
Heard about glaucoma(n=608)	yes	235	38.7
	No	**373**	**61.3**
High eye pressure damage the eye(n=235)	**Yes**	**120**	**51.1**
	No	**115**	48.9
High eye pressure Cause of damage to eye nerve (n=235)	**Yes**	62	26.4
	No	**173**	73.6
Causal visual field loss(n=235)	Yes	101	**43.0**
	No	**134**	**57.0**

Table 4: Associated factors of awareness towards glaucoma among adults n in Jimma town 2020.

Variables	Category	Level of Awareness		COR 95%CI	AOR 95%CI
		Aware N (%)	Not aware N (%)		
Sex	Female	137(40.4)	202(59.6)	1	1
	Male	93(34.6)	176(65.4)	1.28(0.92,1.79)*	1.40(0.96,2.05)
Educational status	Can't read and write	27(31.4)	59(68.6)	1	1
	Can read and write	31(29.2)	75(70.8)	0.90(0.48,1.67)	0.94(0.47,1.89)
	Primary(1-8)	50(33.6)	99(66.4)	1.04(0.62,1.94)	11.15(0.62,2.15)
	Secondary(9-12)	68(43.6)	88(56.4)	1.69(0.97,2.94)*	2.02(1.09,3.75)**
	Above 12	54(48.6)	57(51.4)	2.07(1.15,3.73)*	2.32(1.18,4.55)**
Occupational status	Government employee	46(44.2)	58(55.8)	1.04(0.58,1.85)	1.39(0.63,3.05)
	Merchant	80(36.9)	137(63.1)	0.77(0.46,1.27)*	1.03(0.57,1.87)
	Private (self-employed)	59(34.3)	113(65.7)	0.69(0.406,1.16)*	0.77(0.42,1.42)
	Farmer	7(25.9)	20(74.1)	0.46(0.17,1.20)*	0.87(0.27,2.82)
	House wife	38(43.2)	50(56.8)	1	1
Family history of glaucoma	Yes	86(69.9)	37(30.1)	5.50(3.57,8.47)*	3.82(2.35,6.21)**
	No	144(29.7)	341(70.3)	1	
History of diabetes	Yes	59(54.1)	50(45.9)	1.19(1.07,3.42) *	1.64(0.83,3.24)
	No	139(33.5)	276(66.5)	0.82(0.50,1.33)	0.82 (0.46,1.46)
	Don't know	32(38.1)	52(61.9)	1	1
History of hypertension	Yes	69(44.5)	86(55.5)	1.39(0.82,2.36) *	11.20(0.64,2.27)
	No	127(35.3)	233(64.7)	0.95(0.89,1.52)	1.21(0.69,2.12)
	Don't know	34(36.6)	59(63.4)	1	1
Ever had eye examination	Yes	123(58.9)	86(41.1)	3.90(2.74,5.56) *	2.54(1.70,3.78)**

	No	107(26.8)	292(73.2)	1	1
History of eye disease	Yes	130(48.3)	139(51.70	2.23(1.60,3.12) *	1.03(0.63,1.59)
	No	100(29.5)	239(70.5)	1	1
Wealth status	Very low	46(36.8)	79(63.2)	1	1
	Low	53(39.1)	86(60.9)	1.05(0.64,1.74)	0.96(0.56,1.69)
	Medium	43(38.9)	66(61.1)	1.12(0.66,1.89)	1.06(0.59,1.92)
	High	30(28.4)	85(71.6)	0.60(0.35,1.05) *	0.63(0.34,1.16)
	Very high	58(54.5)	62(45.5)	1.60(0.96,2.67) *	1.87(1.04,3.35)**

Key, * indicates a candidate variable during binary logistic regression at $p \leq 0.25$, ** indicates the independent factors associated with awareness about glaucoma at $p<0.05$.

Table 5: Associated factors of knowledge about glaucoma among adult in Jimma town 2020 (n=230).

Variables	Category	Outcome Variables		COR 95%CI	AOR 95%CI
		Good Knowledge (%)	Poor Knowledge (%)		
Sex	Female	61(44.5)	76(55.5)	1	1
	Male	56(60.2)	37(39.8)	1.88(1.10,3.22) *	1.26(0.67,2.36)
Educational status	Can't read and write	7(25.9)	20(74.1))	1	1
	Can read and write	13(41.9)	18(58.1)	2.06(0.67, 6.31)	1.83(0.57, 5.89)
	Primary (1-8)	19(38.0)	31(62.0)	1.75 (0.62, 4.92)	1.57(0.54, 4.62)
	Secondary (9-12)	41(60.3)	27(39.7)	4.34(1.61,11.65)*	4.74(1.68, 13.34)**
	Above 12	37(68.5)	17(31.5)	6.22 (2.21,17.50)*	6.07(2.06,17.87) **
Family history of glaucoma	Yes	49(57.0)	37(43.0)	1.54(0.89,2.64)*	0.78(0.39, 1.55)
	No	68(47.2)	76(52.8)	1	
Ever had eye examination	Yes	77(59.2)	53(40.8)	3.26(1.89,5.60) *	3.58(2.01, 6.40) **
	No	40(40.0)	60(60.0)	1	1
History of eye disease	Yes	79(59.2)	44(40.8)	2.18(1.28, 3.70)*	1.44(0.72,1.37)
	No	40(40.0)	60(60.0)	1	1
Wealth status	Very low	27(58.7)	19(41.3)	1	1
	Low	19(35.8)	34(64.2)	0.93(0.17,0.86)	0.55(0.22,1.34)
	Medium	24(55.8)	19(44.2)	0.88(0.38,2.06)	1.33(0.50,3.50)
	High	15(50.0)	15(50.0)	0.70(0.28,1.77) *	1.32(0.45,3.84)
	Very high	32(55.2)	26(44.8)	0.86(0.39,1.89) *	2.46(0.92, 6.59)

Key, * indicates a candidate variable during binary logistic regression at $p<0.25$, ** indicates the independent factors associated with knowledge about glaucoma at $p<0.05$.

Figures

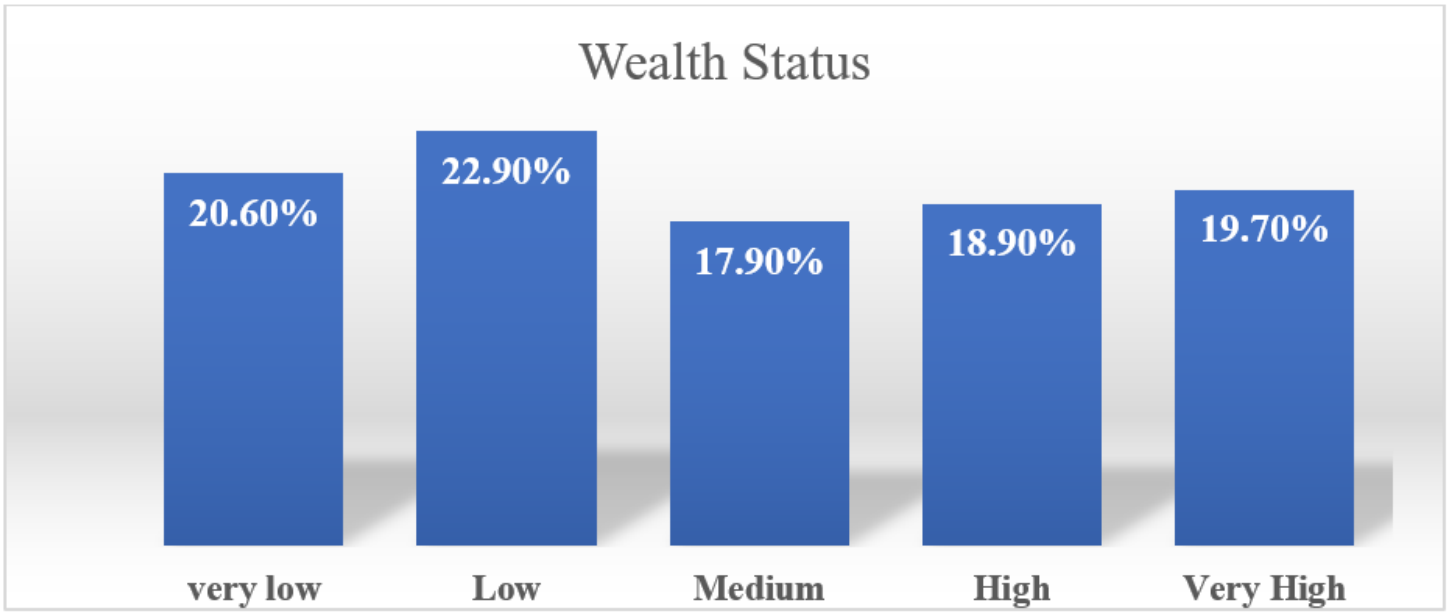

Figure 1

Wealth index status of the adults to assess the level of awareness and knowledge of glaucoma among adults in Jimma town, 2020 (n=608)

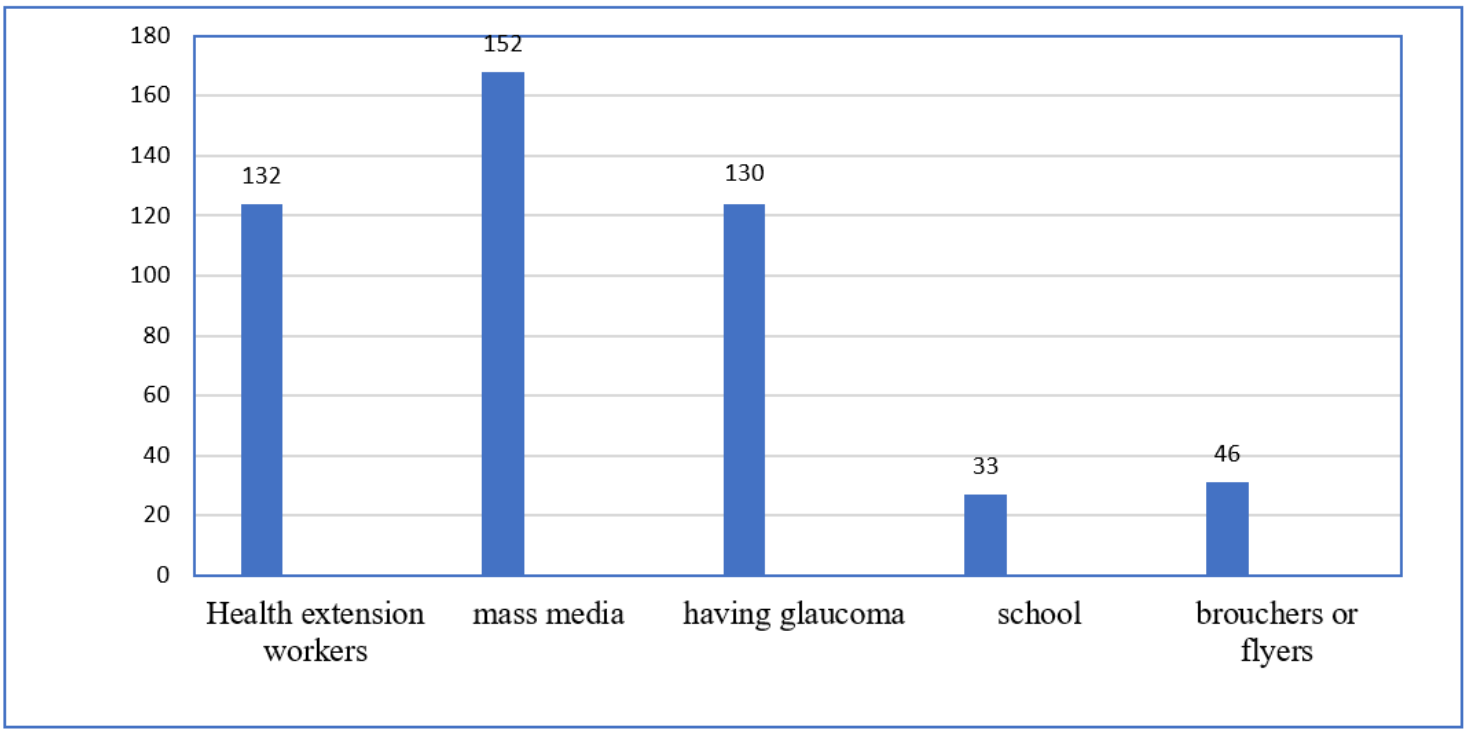

Figure 2

Sources of information to assess the level of awareness and knowledge of glaucoma among adults Jimma town, 2020.

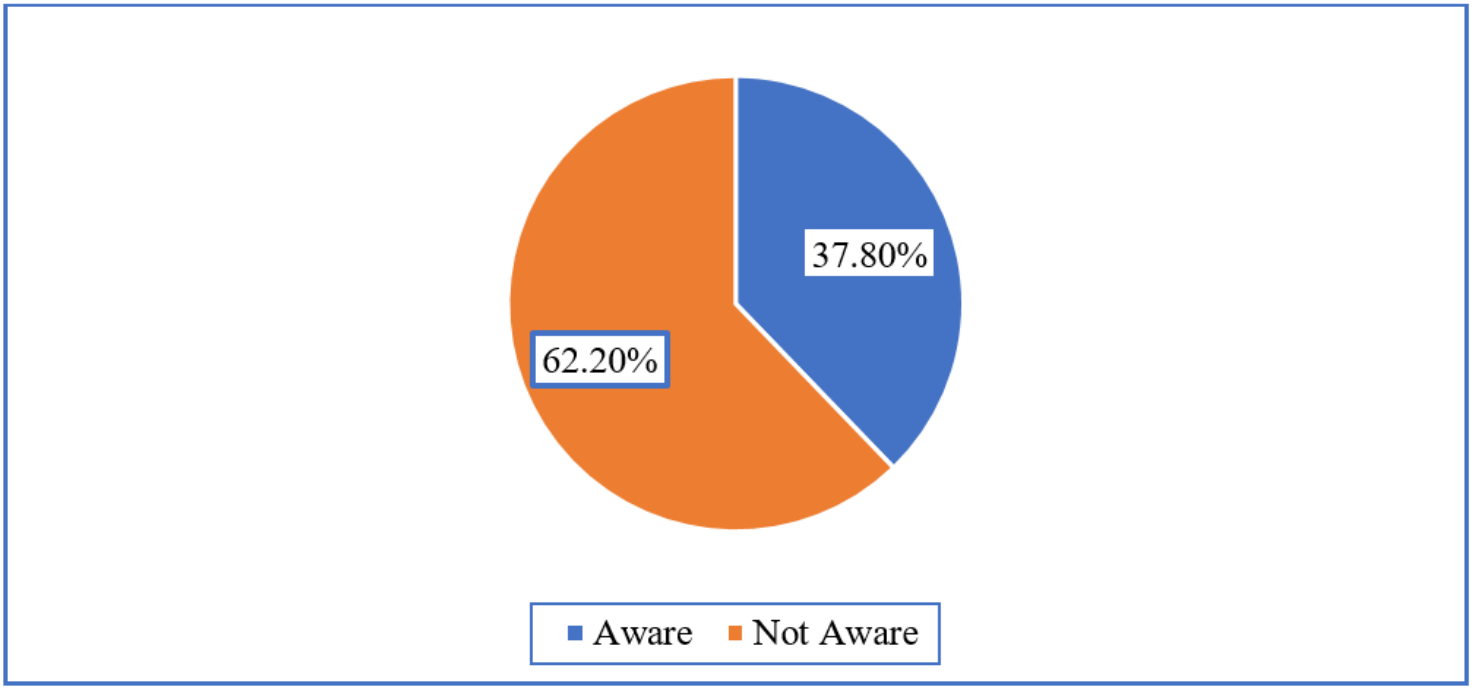

Figure 3

Level of awareness towards glaucoma among adults in Jimma Town 2020.

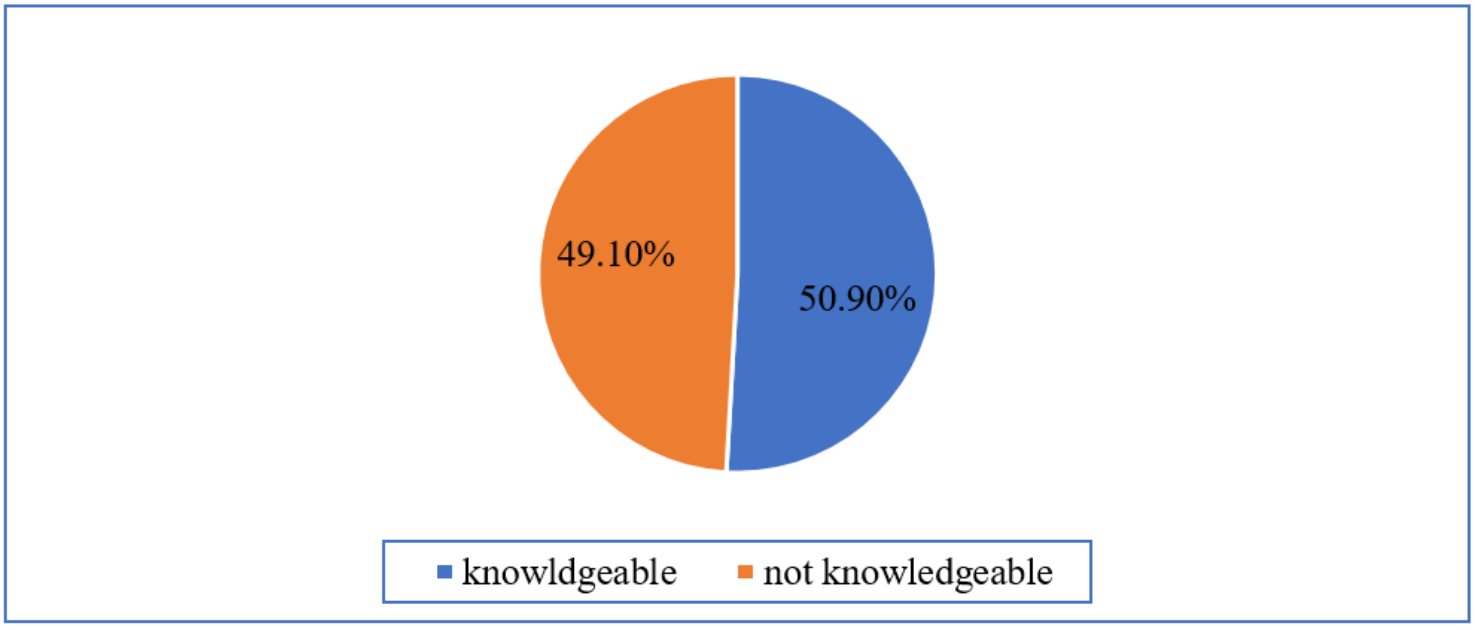

Figure 4

Level of knowledge towards glaucoma among adults in Jimma Town 2020